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**Preemergence and preplant incorporated herbicides for Roundup Ready sugarbeet, Holloway, MN, 2011.**

(Stachler) 'Betaseed 87RR38' Roundup Ready sugarbeet was seeded May 4 at 60,825 seeds per acre in six 22" row plots 30 feet in length in a cooperators field having glyphosate-resistant waterhemp. Sugarbeet seed was treated with Tachigaren at 45 grams dry product per 100,000 seeds and Poncho Beta. Headline at 12 fl oz/A was applied in-furrow at planting to all plots. Preplant incorporated treatments were applied May 3. A C-shank field cultivator with rolling baskets was set to a depth of 2 to 3" and driven once at approximately 5 mph through the center of all plots to incorporate the applied herbicides. Preemergence treatments were applied May 4. Postemergence treatments were applied June 13 and June 30. All treatments were applied in 17 gpa water at 40 psi through XR8002 nozzles to the center four rows of six row plots. Quadris at 15.4 fl oz/A was applied to the entire experiment June 15. Sugarbeet stand counts were recorded for the middle two rows at a total length of 20 feet on June 1 and 60 feet on August 1. Sugarbeet injury was evaluated May 26, June 13, July 14 and July 20. Waterhemp control was evaluated June 13, June 30, July 14, July 20 and August 24. Lambsquarters, common ragweed, and wild buckwheat were evaluated June 13, June 30, July 14, and July 20. Annual grass (75% white robust foxtail and 25% yellow foxtail) was evaluated June 13. All evaluations are a visual estimate of percent weed control or percent sugarbeet injury in the treated plot compared to the adjacent untreated strips and plots. Proline at 5.7 fl oz/A plus NIS at 0.25 %v/v, Agritin at 8 oz/A plus Manzate at 2 pounds/A, and Headline at 7 fl oz/A were applied on July 19, August 9, and August 26, respectively, over the entire trial area to control Cercospora. Sugarbeet from 20 feet of a center row in each plot was harvested September 7.

**Table 1. Application information.**

Date of Application	May 3	May 4	June 13	June 30
Time of Day	4:00 pm	2:40 pm	12:30 pm	12:15 pm
Air Temperature (°F)	58	66	69	88
Relative Humidity (%)	22	24	65	60
Soil Temp. (°F at 6")	48	41	56	72
Wind Velocity (mph)	5.5	21	11	8
Cloud Cover (%)	0	75	75	85
Soil Moisture	good	good	good	good
Sugarbeet Stage (range/Avg)	PPI	PRE	V8.5 - V8.2/V 10.4	V8.0 - V 18/V 14
Waterhemp (range/Avg) Trt. 2	PPI	PRE	cot-14 lf/10 lf; 0.33-6"/3.9"	cot-12lf/5.5 lf; 0.125-12"/2.8"
Waterhemp (avg. density) Trt. 2	PPI	PRE	150/M <sup>2</sup>	9.3/M <sup>2</sup>
Waterhemp (range/Avg) Trt. 18	PPI	PRE	cot-12 lf/8.75 lf; 0.75-4"/2.5"	cot-14lf/3.5 lf; 0.5-6"/1.6"
Waterhemp (avg. density) Trt. 18	PPI	PRE	32/M <sup>2</sup>	3.75/M <sup>2</sup>
Com. Lambsquarters (range/Avg) Trt. 2	PPI	PRE	6 lf-16 lf/10 lf; 1-7"/4.6"	-
Com. Lambsquarters (avg. density) Trt. 2	PPI	PRE	8/M <sup>2</sup>	0/M <sup>2</sup>
Com. Lambsquarters (range/Avg) Trt. 18	PPI	PRE	4 lf-14 lf/10 lf; 0.5-3.5"/2.6"	-
Com. Lambsquarters (avg. density) Trt. 18	PPI	PRE	9/M <sup>2</sup>	0/M <sup>2</sup>
Annual Grasses (range/Avg) Trt. 2	PPI	PRE	1-3 tillers/1.5 tillers; 3.5-10"/7.75"	-
Annual Grasses (avg. density) Trt. 2	PPI	PRE	15/M <sup>2</sup>	0/M <sup>2</sup>
Annual Grasses (range/Avg) Trt. 18	PPI	PRE	3 lf-2 tillers/1 tiller; 1-9"/6"	-
Annual Grasses (avg. density) Trt. 18	PPI	PRE	6/M <sup>2</sup>	0/M <sup>2</sup>

**Summary:** Ro-Neet and Ro-Neet plus Eptam applied PPI caused the greatest sugarbeet injury on May 26. Ro-Neet, Ro-Neet plus Eptam, Dual Magnum and Nortron applied PPI caused the greatest sugarbeet injury on June 13. Injury declined over time and only the Ro-Neet plus Eptam seemed to reduce sugarbeet root yield due to injury, otherwise Ro-Neet applied PRE reduced sugarbeet yield, due to the poor control of waterhemp.

On August 24, Roundup PowerMAX applied twice controlled only 54% of waterhemp, indicating the presence of glyphosate-resistant biotype(s) in the population.

At the time of the first postemergence application (June 13), Ro-Neet plus Eptam applied PPI and Nortron applied PRE controlled the most waterhemp. Ro-Neet and Ro-Neet plus Eptam must be incorporated to maximize control of all weed species, but especially waterhemp and annual grasses. Two applications of glyphosate following all PRE and PPI herbicide treatments improved weed control compared to the soil-applied herbicide alone, but the glyphosate-resistant waterhemp was not completely controlled by any treatment, leading to future problems.

**Experiment continued on next page.**

**Table 2. Preemergence and preplant incorporated herbicides for Roundup Ready sugarbeet, Holloway, MN, 2011. (Stachler)**

Trt #	Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	May 26 Sgt Inju %	June 1 Sgt Popl Plt/20'	July 12 Sgt Popl Plt/60'
1.	Untreated Check	0	---	1	44	125
2.	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	1	50	134
3.	Ro-Neet 4 EC (PPI)	4	May 3			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	12	45	118
4.	Ro-Neet SB (PPI)	4	May 3			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	15	44	123
5.	Ro-Neet 4 EC (PRE)	4	May 4			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	3	51	134
6.	Ro-Neet SB (PRE)	4	May 4			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	3	47	136
7.	Ro-Neet 4 EC (PPI)	4	May 3			
	RUPowerMAX+Outlook+AMS	1.125 + 0.984 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	13	48	122
8.	Ro-Neet 4 EC (PRE)	4	May 4			
	RUPowerMAX+Outlook+AMS	1.125 + 0.984 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	3	51	142
9.	Ro-Neet 4 EC (PPI)	4	May 3			
	RUPowerMAX+Warrant+AMS	1.125 + 1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	21	43	122
10.	Ro-Neet 4 EC (PRE)	4	May 4			
	RUPowerMAX+Warrant+AMS	1.125 + 1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	4	53	142
11.	Ro-Neet 4 EC + Eptam (PPI)	2.5 + 2	May 3			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	22	42	126
12.	Ro-Neet 4 EC + Eptam (PRE)	2.5 + 2	May 4			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	51	137
13.	Nortron (PPI)	3.75	May 3			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	52	137
14.	Nortron (PRE)	3.75	May 4			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	1	48	144
15.	Dual 8 EC (PPI)	1.4	May 3			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	6	46	132
16.	Dual 8 EC (PRE)	1.4	May 4			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	2	52	139
17.	Warrant (PPI)	1.4	May 3			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	1	52	145
18.	Warrant (PRE)	1.4	May 4			
	RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13			
	RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	4	50	138
LSD (5%)				5.5	NS	NS

<sup>1</sup>AMS=N-Pak AMS (liquid ammonium sulfate from Winfield Solutions), RUPowerMAX=Roundup PowerMAX.

**Experiment continued on next page.**

**Table 3. Preemergence and preplant incorporated herbicides for Roundup Ready sugarbeet, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	June 13					
			Sgbt Inju	Wahe Cntl	Colq Cntl	Corw Cntl	Wibw Cntl	Grass Cntl
			----- % -----					
Untreated Check	0	---	0	0	0	0	0	0
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	0	0	0	0	0	0
Ro-Neet 4 EC (PPI)	4	May 3						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	10	78	76	35	35	75
Ro-Neet SB (PPI)	4	May 3						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	17	71	69	43	44	78
Ro-Neet 4 EC (PRE)	4	May 4						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	41	56	33	28	65
Ro-Neet SB (PRE)	4	May 4						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	6	51	61	31	26	56
Ro-Neet 4 EC (PPI)	4	May 3						
RUPowerMAX+Outlook+AMS	1.125 + 0.984 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	12	80	74	44	38	83
Ro-Neet 4 EC (PRE)	4	May 4						
RUPowerMAX+Outlook+AMS	1.125 + 0.984 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	6	48	50	34	31	63
Ro-Neet 4 EC (PPI)	4	May 3						
RUPowerMAX+Warrant+AMS	1.125 + 1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	17	84	68	39	38	83
Ro-Neet 4 EC (PRE)	4	May 4						
RUPowerMAX+Warrant+AMS	1.125 + 1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	48	54	38	31	68
Ro-Neet 4 EC + Eptam (PPI)	2.5 + 2	May 3						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	24	91	83	46	44	91
Ro-Neet 4 EC + Eptam (PRE)	2.5 + 2	May 4						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	9	73	53	35	34	71
Nortron (PPI)	3.75	May 3						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	15	83	71	35	46	78
Nortron (PRE)	3.75	May 4						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	6	89	74	48	46	80
Dual 8 EC (PPI)	1.4	May 3						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	14	76	55	33	32	80
Dual 8 EC (PRE)	1.4	May 4						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	7	82	56	29	34	80
Warrant (PPI)	1.4	May 3						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	8	48	34	30	29	43
Warrant (PRE)	1.4	May 4						
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13						
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	4	71	46	33	34	66
LSD (5%)			5.6	13.4	17.8	12.4	10.0	12.9

<sup>1</sup>AMS=N-Pak AMS (liquid ammonium sulfate from Winfield Solutions), RUPowerMAX=Roundup PowerMAX.

**Experiment continued on next page.**

**Table 4. Preemergence and preplant incorporated herbicides for Roundup Ready sugarbeet, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	July 20				
			Sgbt Inju	Wahe Cntl	Colq Cntl	Corw Cntl	Wibw Cntl
			----- % -----				
Untreated Check	0	---	0	0	0	0	0
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	1	57	99	99	95
Ro-Neet 4 EC (PPI)	4	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	3	86	99	99	97
Ro-Neet SB (PPI)	4	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	72	99	99	95
Ro-Neet 4 EC (PRE)	4	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	9	63	99	99	95
Ro-Neet SB (PRE)	4	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	2	60	99	99	95
Ro-Neet 4 EC (PPI)	4	May 3					
RUPowerMAX+Outlook+AMS	1.125 + 0.984 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	7	90	99	99	98
Ro-Neet 4 EC (PRE)	4	May 4					
RUPowerMAX+Outlook+AMS	1.125 + 0.984 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	0	64	99	99	94
Ro-Neet 4 EC (PPI)	4	May 3					
RUPowerMAX+Warrant+AMS	1.125 + 1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	87	99	99	97
Ro-Neet 4 EC (PRE)	4	May 4					
RUPowerMAX+Warrant+AMS	1.125 + 1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	65	99	99	97
Ro-Neet 4 EC + Eptam (PPI)	2.5 + 2	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	92	99	99	93
Ro-Neet 4 EC + Eptam (PRE)	2.5 + 2	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	3	80	99	99	98
Nortron (PPI)	3.75	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	94	99	99	95
Nortron (PRE)	3.75	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	5	96	99	99	98
Dual 8 EC (PPI)	1.4	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	3	87	99	99	97
Dual 8 EC (PRE)	1.4	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	1	91	94	94	90
Warrant (PPI)	1.4	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	3	73	99	99	99
Warrant (PRE)	1.4	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	1	83	99	99	97
LSD (5%)			NS	18.2	3.2	3.2	5.5

<sup>1</sup>AMS=N-Pak AMS (liquid ammonium sulfate from Winfield Solutions), RUPowerMAX=Roundup PowerMAX.

**Experiment continued on next page.**

**Table 5. Preemergence and preplant incorporated herbicides for Roundup Ready sugarbeet, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	Aug. 24		Sept. 7		Extrac Sucrose lb/A
			Wahe Cntl %	Sgbt Popl Plts/20'	Root Yield Tons/A	Sucrose %	
Untreated Check	0	---	0	29	0.8	-	-
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	54	41	12.7	14.0	2986
Ro-Neet 4 EC (PPI)	4	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	78	40	13.9	13.2	2973
Ro-Neet SB (PPI)	4	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	66	37	13.2	13.4	2953
Ro-Neet 4 EC (PRE)	4	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	59	38	11.5	13.0	2511
Ro-Neet SB (PRE)	4	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	62	41	10.8	13.5	2489
Ro-Neet 4 EC (PPI)	4	May 3					
RUPowerMAX+Outlook+AMS	1.125 + 0.984 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	80	41	13.1	13.0	2732
Ro-Neet 4 EC (PRE)	4	May 4					
RUPowerMAX+Outlook+AMS	1.125 + 0.984 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	57	47	13.3	13.7	3056
Ro-Neet 4 EC (PPI)	4	May 3					
RUPowerMAX+Warrant+AMS	1.125 + 1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	82	41	14.2	13.4	3116
Ro-Neet 4 EC (PRE)	4	May 4					
RUPowerMAX+Warrant+AMS	1.125 + 1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	60	48	12.6	13.4	2768
Ro-Neet 4 EC + Eptam (PPI)	2.5 + 2	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	82	42	12.5	14.0	2907
Ro-Neet 4 EC + Eptam (PRE)	2.5 + 2	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	72	48	14.9	13.4	3346
Nortron (PPI)	3.75	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	88	44	16.6	13.7	3752
Nortron (PRE)	3.75	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	88	49	14.6	13.0	3134
Dual 8 EC (PPI)	1.4	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	82	45	15.1	13.3	3357
Dual 8 EC (PRE)	1.4	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	90	45	15.7	13.3	3442
Warrant (PPI)	1.125	May 3					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	72	52	16.4	13.6	3711
Warrant (PRE)	1.125	May 4					
RUPowerMAX+AMS	1.125 + 2.5% v/v	June 13					
RUPowerMAX+AMS	0.75 + 2.5% v/v	June 30	83	45	15.1	13.5	3350
LSD (5%)			17.0	NS	3.70	0.63	NS

<sup>1</sup>AMS=N-Pak AMS (liquid ammonium sulfate from Winfield Solutions), RUPowerMAX=Roundup PowerMAX.

**Ro-Neet followed by postemergence and lay-by herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011.** (Stachler) 'Hilleshog 4022' Roundup Ready sugarbeet seed treated with Tachigaren at 45 grams product per 100,000 seeds and Poncho Beta was seeded May 4 at 60,825 seeds/A in six row plots 30 feet long in a cooperators field having glyphosate-resistant waterhemp. Headline at 12 fl oz/A was applied in-furrow at planting to all plots. Preplant incorporated treatments were applied May 3 and incorporated 2 inches deep with a field cultivator with rolling baskets. Postemergence herbicide treatments were applied May 25, June 9 and June 24. All treatments were applied in 17 gpa water at 40 psi through XR8002 nozzles to the center four rows of six row plots. All postemergence treatments included N-Pak AMS at 2.5% v/v and Destiny HC at 1.5 pt/A. Quadris at 15.4 fl oz/A was applied to the entire experiment June 15. Sugarbeet injury and common lambsquarters control were evaluated May 26, June 9, June 24, July 8 and July 20. Waterhemp control was evaluated May 26, June 9, June 24, July 8, July 20 and August 24. Annual grass control was evaluated May 26 and July 20. Wild buckwheat control was evaluated May 26, June 24, July 8 and July 20. Common ragweed control was evaluated July 8 and July 20. Proline at 5.7 fl oz/A plus NIS at 0.25 %v/v, Agritin at 8 oz/A plus Manzate at 2 pounds/A, and Headline at 7 fl oz/A were applied on July 19, August 9, and August 26, respectively, over the entire trial area to control Cercospora. Sugarbeet from 20 feet of a center row in each plot was harvested September 7.

**Table 1. Application information.**

Date of Application	May 3	May 26	June 9	June 24
Time of Day	5:00 pm	2:45 pm	11:00 am	12:35 pm
Air Temperature (°F)	58	70	61	69
Relative Humidity (%)	22	31	47	59
Soil Temp. (°F at 6")	48	58	58	63
Wind Velocity (mph)	8	3	12	7
Cloud Cover (%)	0	10	95	90
Soil Moisture	Good	Good	Good	Good
Sugarbeet Stage (range/Avg)	PPI	V1.0-V2.3/V2.0	V6.0-V10.0/V8.5	-
Waterhemp (range/Avg) Trt. 1	PPI	cot-3 lf/2 lf; 0-0.25"/0.125"	cot-13 lf/9 lf; 0.125-5"/3"	-
Waterhemp (avg. density) Trt. 1	PPI	96/M <sup>2</sup>	166/M <sup>2</sup>	-
Waterhemp (range/Avg) Trt. 2	PPI	cot-3 lf/2 lf; 0-0.33"/0.125"	cot-10 lf/6 lf; 0.125-2"/1.25"	-
Waterhemp (avg. density) Trt. 2	PPI	104/M <sup>2</sup>	44/M <sup>2</sup>	-
Waterhemp (range/Avg) Trt. 14	PPI	cot-2 lf/1 lf; 0-0.125/0.125	cot-10 lf/6 lf; 0.125-2"/1"	-
Waterhemp (avg. density) Trt. 14	PPI	10/M <sup>2</sup>	7/M <sup>2</sup>	-
Com. Lambsquarters (range/Avg) Trt. 1	PPI	2-4 lf/2 lf; 0.25-0.75"/0.5"	2-17 lf/12 lf; 0.25-7.5"/3"	-
Com. Lambsquarters (avg. density) Trt. 1	PPI	6/M <sup>2</sup>	18/M <sup>2</sup>	-
Com. Lambsquarters (range/Avg) Trt. 2	PPI	cot-4 lf/2 lf; 0.125-0.5"/0.33"	4-8 lf/5 lf; 0.5-0.75"/0.67"	-
Com. Lambsquarters (avg. density) Trt. 2	PPI	5/M <sup>2</sup>	1/M <sup>2</sup>	-
Com. Lambsquarters (range/Avg) Trt. 14	PPI	cot-2 lf/2 lf; 0.125-0.33"/0.25"	3-6 lf/4.5 lf; 0.33-0.75"/0.5"	-
Com. Lambsquarters (avg. density) Trt. 14	PPI	0.5/M <sup>2</sup>	0.5/M <sup>2</sup>	-
Annual Grasses (range/Avg) Trt. 1	PPI	1-3 lf/2 lf; 0.25-1.25"/0.5"	1-7 Till/4 Till; 1-5"/3"	-
Annual Grasses (avg. density) Trt. 1	PPI	7/M <sup>2</sup>	9/M <sup>2</sup>	-
Annual Grasses (range/Avg) Trt. 2	PPI	1-3 lf/2 lf; 0.25-1"/0.75"	3 lf-1T/1T; 0.75-1.75"/1.25"	-
Annual Grasses (avg. density) Trt. 2	PPI	5/M <sup>2</sup>	0.5/M <sup>2</sup>	-
Annual Grasses (range/Avg) Trt. 14	PPI	-	-	-
Annual Grasses (avg. density) Trt. 14	PPI	0/M <sup>2</sup>	0/M <sup>2</sup>	-
Wild Buckwheat (range/Avg) Trt. 1	PPI	cot-2 lf/1 lf; 0.33-1"/0.5"	1-11 lf/3 lf; 0.75-11"/3"	-
Wild Buckwheat (avg. density) Trt. 1	PPI	13/M <sup>2</sup>	16/M <sup>2</sup>	-
Wild Buckwheat (range/Avg) Trt. 2	PPI	1 lf/1 lf; 0.25-0.75"/0.5"	2-3 lf/3 lf; 0.75-1.5"/1.25"	-
Wild Buckwheat (avg. density) Trt. 2	PPI	4/M <sup>2</sup>	1/M <sup>2</sup>	-
Wild Buckwheat (range/Avg) Trt. 14	PPI	cot-2 lf/1 lf; 0.25-1"/0.5"	2-5 lf/3 lf; 0.5-3"/1.25"	-
Wild Buckwheat (avg. density) Trt. 14	PPI	9/M <sup>2</sup>	4/M <sup>2</sup>	-
Common Ragweed (range/Avg) Trt. 1	PPI	1 N/1 N; 0.33"/0.33"	-	-
Common Ragweed (avg. density) Trt. 1	PPI	0.5/M <sup>2</sup>	-	-
Common Ragweed (range/Avg) Trt. 2	PPI	1 N/1 N; 0.5"/0.5"	-	-
Common Ragweed (avg. density) Trt. 2	PPI	1/M <sup>2</sup>	-	-
Common Ragweed (range/Avg) Trt. 14	PPI	cot/cot; 0.25"/0.25"	-	-
Common Ragweed (avg. density) Trt. 14	PPI	0.25/M <sup>2</sup>	-	-

**Summary:** Significant sugarbeet injury was caused by Ro-Neet due to the soil being sandier than most soils in the area. Significant sugarbeet injury persisted during the growing season, especially treatments containing Ro-Neet followed by a lay-by herbicide mixed with Betamix plus Nortron or Betanex, however sugarbeet yield was not different for most treatments.

Roundup PowerMAX applied three times controlled 93 to 99% of wild buckwheat, common lambsquarters, and annual grass on July 20, but only controlled 51% of waterhemp on August 24, indicating the presence of glyphosate-resistant waterhemp at this location. Treatments containing Ro-Neet followed by Betamix plus Nortron or Betanex plus a lay-by herbicide controlled the most waterhemp.

Experiment continued on next page.

**Table 2. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	(1)	(2)	(3)	(4)	(5)
			May26 Sgbr Inju %	May26 Wahe Cntl %	May26 Colq Cntl %	May26 Grass Cntl %	May26 Wibw Cntl %
Untreated Check	-	-	0	0	0	0	0
Roundup PM	1.125	May 25					
Roundup PM	0.75	June 9, 24	0	0	0	0	0
Roundup PM+Betanex	1.125+12 fl oz/A	May 25					
Roundup PM+Betanex	0.75+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	0	0	0	0	0
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	May 25					
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 9					
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	June 24	0	0	0	0	0
Roundup PM+Outlook	1.125+14 fl oz/A	May 25					
Roundup PM+Outlook	0.75+10 fl oz/A	June 9					
Roundup PM	0.75	June 24	0	0	0	0	0
Roundup PM+Outlook+Betanex	1.125+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Outlook+Betanex	0.75+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	0	0	0	0	0
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	0	0	0	0	0
Roundup PM+Dual Magnum	1.125+1.5 pt/A	May 25					
Roundup PM+Dual Magnum	0.75+1 pt/A	June 9					
Roundup PM	0.75	June 24	0	0	0	0	0
Roundup PM+Dual Magnum+Betanex	1.125+1.5 pt/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Betanex	0.75+1 pt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	0	0	0	0	0
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	0	0	0	0	0
Roundup PM+Warrant	1.125+1.5 qt/A	May 25					
Roundup PM+Warrant	0.75+1 qt/A	June 9					
Roundup PM	0.75	June 24	0	0	0	0	0
Roundup PM+Warrant+Betanex	1.125+1.5 qt/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Betanex	0.75+1 qt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	0	0	0	0	0
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	0	0	0	0	0
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM	1.125	June 9					
Roundup PM	0.75	June 24	22	85	88	95	26
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Betanex	1.125+12 fl oz/A	May 25					
Roundup PM+Betanex	0.75+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	23	87	92	96	28

Table continued on next page.



**Table 2. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)**

			(1)	(2)	(3)	(4)	(5)
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	May 25					
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 9					
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	June 24	21	86	88	95	29
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Outlook	1.125+14 fl oz/A	May 25					
Roundup PM+Outlook	0.75+10 fl oz/A	June 9					
Roundup PM	0.75	June 24	19	87	91	95	28
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Outlook+Betanex	1.125+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Outlook+Betanex	0.75+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	22	87	90	96	30
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	25	86	90	95	30
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum	1.125+1.5 pt/A	May 25					
Roundup PM+Dual Magnum	0.75+1 pt/A	June 9					
Roundup PM	0.75	June 24	25	88	90	96	30
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum+Betanex	1.125+1.5 pt/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Betanex	0.75+1 pt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	23	88	89	95	30
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	19	85	87	93	29
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant	1.125+1.5 qt/A	May 25					
Roundup PM+Warrant	0.75+1 qt/A	June 9					
Roundup PM	0.75	June 24	22	86	90	95	30
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant+Betanex	1.125+1.5 qt/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Betanex	0.75+1 qt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	20	87	88	95	30
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	22	84	90	95	30
LSD (5%)			4	2	3	1	3

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v. Destiny HC (methylated seed oil from Winfield Solutions) was included in all postemergence treatments at 1.5 pt/A. Roundup PM=Roundup PowerMax formulation of glyphosate.

Experiment continued on next page.

**Table 3. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	(6)	(7)	(8)	(9)	(10)
			June 9 Sgbt Inju %	June 9 Wahe Cntl %	June 9 Colq Cntl %	July 20 Sgbt Inj %	July 20 Wahe Cntl %
Untreated Check	-	-	0	0	0	0	0
Roundup PM	1.125	May 25					
Roundup PM	0.75	June 9, 24	2	71	91	0	51
Roundup PM+Betanex	1.125+12 fl oz/A	May 25					
Roundup PM+Betanex	0.75+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	7	74	90	8	74
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	May 25					
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 9					
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	June 24	7	71	93	14	61
Roundup PM+Outlook	1.125+14 fl oz/A	May 25					
Roundup PM+Outlook	0.75+10 fl oz/A	June 9					
Roundup PM	0.75	June 24	7	86	95	11	73
Roundup PM+Outlook+Betanex	1.125+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Outlook+Betanex	0.75+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	7	92	93	10	92
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	9	94	96	16	88
Roundup PM+Dual Magnum	1.125+1.5 pt/A	May 25					
Roundup PM+Dual Magnum	0.75+1 pt/A	June 9					
Roundup PM	0.75	June 24	6	88	92	9	79
Roundup PM+Dual Magnum+Betanex	1.125+1.5 pt/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Betanex	0.75+1 pt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	13	82	94	14	80
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	11	86	94	12	87
Roundup PM+Warrant	1.125+1.5 qt/A	May 25					
Roundup PM+Warrant	0.75+1 qt/A	June 9					
Roundup PM	0.75	June 24	4	84	91	9	73
Roundup PM+Warrant+Betanex	1.125+1.5 qt/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Betanex	0.75+1 qt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	7	79	94	11	87
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	8	87	96	13	91
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM	1.125	June 9					
Roundup PM	0.75	June 24	6	86	94	9	74
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Betanex	1.125+12 fl oz/A	May 25					
Roundup PM+Betanex	0.75+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	14	94	96	10	90
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	May 25					
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 9					
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	June 24	15	93	97	10	83
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Outlook	1.125+14 fl oz/A	May 25					
Roundup PM+Outlook	0.75+10 fl oz/A	June 9					
Roundup PM	0.75	June 24	10	98	99	18	97

Table continued on next page.

**Table 3. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)**

			(6)	(7)	(8)	(9)	(10)
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Outlook+Betanex	1.125+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Outlook+Betanex	0.75+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	15	97	97	12	99
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	16	98	96	16	97
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum	1.125+1.5 pt/A	May 25					
Roundup PM+Dual Magnum	0.75+1 pt/A	June 9					
Roundup PM	0.75	June 24	13	98	99	15	97
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum+Betanex	1.125+1.5 pt/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Betanex	0.75+1 pt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	18	98	97	11	98
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	18	95	99	10	94
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant	1.125+1.5 qt/A	May 25					
Roundup PM+Warrant	0.75+1 qt/A	June 9					
Roundup PM	0.75	June 24	5	68	74	9	83
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant+Betanex	1.125+1.5 qt/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Betanex	0.75+1 qt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	15	96	97	12	95
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	17	98	97	15	98
LSD (5%)			5	7	6	9	10

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v. Destiny HC (methylated seed oil from Winfield Solutions) was included in all postemergence treatments at 1.5 pt/A. Roundup PM=Roundup PowerMax formulation of glyphosate.

Experiment continued on next page.

**Table 4. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	(11)	(12)	(13)	(14)	(15)
			July 20 Colq Cntl %	July 20 Wibw Cntl %	July 20 Cora Cntl %	July 20 Grass Cntl %	Aug 24 Wahe Cntl %
Untreated Check	-	-	0	0	0	0	0
Roundup PM	1.125	May 25					
Roundup PM	0.75	June 9, 24	99	93	99	99	51
Roundup PM+Betanex	1.125+12 fl oz/A	May 25					
Roundup PM+Betanex	0.75+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	98	84	99	97	60
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	May 25					
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 9					
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	June 24	99	98	99	98	54
Roundup PM+Outlook	1.125+14 fl oz/A	May 25					
Roundup PM+Outlook	0.75+10 fl oz/A	June 9					
Roundup PM	0.75	June 24	99	83	99	99	64
Roundup PM+Outlook+Betanex	1.125+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Outlook+Betanex	0.75+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	99	86	99	99	80
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	99	97	99	99	79
Roundup PM+Dual Magnum	1.125+1.5 pt/A	May 25					
Roundup PM+Dual Magnum	0.75+1 pt/A	June 9					
Roundup PM	0.75	June 24	99	81	99	99	70
Roundup PM+Dual Magnum+Betanex	1.125+1.5 pt/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Betanex	0.75+1 pt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	99	93	98	99	68
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	99	99	99	99	73
Roundup PM+Warrant	1.125+1.5 qt/A	May 25					
Roundup PM+Warrant	0.75+1 qt/A	June 9					
Roundup PM	0.75	June 24	99	89	99	98	68
Roundup PM+Warrant+Betanex	1.125+1.5 qt/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Betanex	0.75+1 qt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	99	94	99	99	72
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	99	99	99	99	80
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM	1.125	June 9					
Roundup PM	0.75	June 24	99	78	99	99	72
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Betanex	1.125+12 fl oz/A	May 25					
Roundup PM+Betanex	0.75+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	99	93	99	99	80

Table continued on next page.

**Table 4. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)**

			(11)	(12)	(13)	(14)	(15)
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	May 25					
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 9					
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	June 24	99	99	99	99	79
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Outlook	1.125+14 fl oz/A	May 25					
Roundup PM+Outlook	0.75+10 fl oz/A	June 9					
Roundup PM	0.75	June 24	99	93	99	99	92
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Outlook+Betanex	1.125+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Outlook+Betanex	0.75+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	98	92	98	98	98
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	99	99	99	99	94
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum	1.125+1.5 pt/A	May 25					
Roundup PM+Dual Magnum	0.75+1 pt/A	June 9					
Roundup PM	0.75	June 24	99	80	99	99	95
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum+Betanex	1.125+1.5 pt/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Betanex	0.75+1 pt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	96	89	95	96	96
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	99	99	99	99	90
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant	1.125+1.5 qt/A	May 25					
Roundup PM+Warrant	0.75+1 qt/A	June 9					
Roundup PM	0.75	June 24	94	82	94	94	84
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant+Betanex	1.125+1.5 qt/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Betanex	0.75+1 qt/A+16 fl oz/A	June 9					
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	98	93	99	99	93
Ro-Neet SB (PPI)	5.3 pt/A	May 3					
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	May 25					
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 9					
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	99	98	99	99	98
LSD (5%)			3	9	3	4	10

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v. Destiny HC (methylated seed oil from Winfield Solutions) was included in all postemergence treatments at 1.5 pt/A. Roundup PM=Roundup PowerMax formulation of glyphosate.

Experiment continued on next page.

**Table 5. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	(16)	(17)	(18)	(19)
			Sept.7 Sgbt Popl pfts/20 <sup>7</sup>	Sept.7 Root Yield tons/A	Sept.7 Extract Sucrose lb/A	Sept.7 Sucrose %
Untreated Check	-	-	8	0.4	0	0
Roundup PM	1.125	May 25				
Roundup PM	0.75	June 9, 24	47	13.5	3086	13.9
Roundup PM+Betanex	1.125+12 fl oz/A	May 25				
Roundup PM+Betanex	0.75+16 fl oz/A	June 9				
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	47	12.6	3028	13.7
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	May 25				
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	June 24	51	10.9	2637	12.1
Roundup PM+Outlook	1.125+14 fl oz/A	May 25				
Roundup PM+Outlook	0.75+10 fl oz/A	June 9				
Roundup PM	0.75	June 24	50	13.0	3072	13.0
Roundup PM+Outlook+Betanex	1.125+14 fl oz/A+12 fl oz/A	May 25				
Roundup PM+Outlook+Betanex	0.75+10 fl oz/A+16 fl oz/A	June 9				
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	52	15.1	3383	13.6
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	May 25				
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 9				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	49	14.7	3353	14.4
Roundup PM+Dual Magnum	1.125+1.5 pt/A	May 25				
Roundup PM+Dual Magnum	0.75+1 pt/A	June 9				
Roundup PM	0.75	June 24	50	14.2	3257	13.2
Roundup PM+Dual Magnum+Betanex	1.125+1.5 pt/A+12 fl oz/A	May 25				
Roundup PM+Dual Magnum+Betanex	0.75+1 pt/A+16 fl oz/A	June 9				
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	50	14.4	3296	14.1
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	May 25				
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 9				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	51	14.2	3237	14.4
Roundup PM+Warrant	1.125+1.5 qt/A	May 25				
Roundup PM+Warrant	0.75+1 qt/A	June 9				
Roundup PM	0.75	June 24	53	16.3	3890	15.2
Roundup PM+Warrant+Betanex	1.125+1.5 qt/A+12 fl oz/A	May 25				
Roundup PM+Warrant+Betanex	0.75+1 qt/A+16 fl oz/A	June 9				
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	55	15.1	3431	14.7
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	May 25				
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 9				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	57	14.3	3278	15.2
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM	1.125	June 9				
Roundup PM	0.75	June 24	51	12.7	2999	14.6
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Betanex	1.125+12 fl oz/A	May 25				
Roundup PM+Betanex	0.75+16 fl oz/A	June 9				
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	44	12.6	3007	14.9
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	May 25				
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	June 24	46	16.3	3969	15.2
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Outlook	1.125+14 fl oz/A	May 25				
Roundup PM+Outlook	0.75+10 fl oz/A	June 9				
Roundup PM	0.75	June 24	56	14.7	3501	15.7

Table continued on next page.

**Table 5. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)**

			(16)	(17)	(18)	(19)
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Outlook+Betanex	1.125+14 fl oz/A+12 fl oz/A	May 25				
Roundup PM+Outlook+Betanex	0.75+10 fl oz/A+16 fl oz/A	June 9				
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	51	14.8	3480	14.9
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	May 25				
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 9				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	53	14.2	3337	14.9
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Dual Magnum	1.125+1.5 pt/A	May 25				
Roundup PM+Dual Magnum	0.75+1 pt/A	June 9				
Roundup PM	0.75	June 24	46	13.4	3203	15.4
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Dual Magnum+Betanex	1.125+1.5 pt/A+12 fl oz/A	May 25				
Roundup PM+Dual Magnum+Betanex	0.75+1 pt/A+16 fl oz/A	June 9				
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	51	14.5	3379	13.8
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	May 25				
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 9				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	55	14.1	3352	14.0
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Warrant	1.125+1.5 qt/A	May 25				
Roundup PM+Warrant	0.75+1 qt/A	June 9				
Roundup PM	0.75	June 24	57	15.3	3491	14.4
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Warrant+Betanex	1.125+1.5 qt/A+12 fl oz/A	May 25				
Roundup PM+Warrant+Betanex	0.75+1 qt/A+16 fl oz/A	June 9				
Roundup PM+Betanex	0.75+24 fl oz/A	June 24	50	12.8	2958	13.9
Ro-Neet SB (PPI)	5.3 pt/A	May 3				
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	May 25				
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 9				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	June 24	53	14.0	3239	13.9
LSD (5%)			10	3.4	813	2.4

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v. Destiny HC (methylated seed oil from Winfield Solutions) was included in all postemergence treatments at 1.5 pt/A. Roundup PM=Roundup PowerMax formulation of glyphosate.

**Ro-Neet versus Nortron followed by postemergence and lay-by herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011.** (Stachler) ‘Hilleshog 4022’ Roundup Ready sugarbeet seed treated with Tachigaren at 45 grams product per 100,000 seeds and Poncho Beta was seeded May 16 at 60,825 seeds/A in six row plots 30 feet in length in a cooperators field having glyphosate-resistant waterhemp. Headline at 12 fl oz/A was applied in-furrow at planting to all plots. Preplant incorporated treatments were applied May 16 and incorporated 2 inches deep with a field cultivator with rolling baskets. Postemergence herbicide treatments were applied June 9 June 27 and July 12. All treatments were applied in 17 gpa water at 40 psi through XR8002 nozzles to the center four rows of six row plots. All postemergence treatments included N-Pak AMS at 2.5% v/v and Destiny HC at 1.5 pt/A (except treatment 15). Quadris at 15.4 fl oz/A was applied June 15 to the entire experiment. Sugarbeet injury was evaluated June 27, July 12, July 20, and August 9. Waterhemp control was evaluated June 27, July 12, July 20, August 9 and August 24. Sugarbeet stand counts were recorded for the middle two rows at a total length of 60 feet on June 30 and August 1. All evaluations are a visual estimate of percent weed control or percent sugarbeet injury in the treated plot compared to the adjacent untreated strips and plots. Proline at 5.7 fl oz/A plus NIS at 0.25 %v/v, Agritin at 8 oz/A plus Manzate at 2 pounds/A, and Headline at 7 fl oz/A were applied on July 19, August 9, and August 26, respectively, over the entire trial area to control Cercospora. Sugarbeet from 20 feet of a center row in each plot was harvested September 7.

**Table 1. Application information.**

Date of Application	May 16	June 9	June 27	July 12
Time of Day	5:00 pm	3:45 pm	2:15 pm	1:15 pm
Air Temperature (°F)	66	63	71	76
Relative Humidity (%)	23	45	62	45
Soil Temp. (°F at 6")	46	57	58	72
Wind Velocity (mph)	9	16	15	3
Cloud Cover (%)	0	95	50	10
Soil Moisture	good	good	wet	good
Sugarbeet Stage (range/Avg)	PPI	V1.0-V2.7/V2.0	-	V10-V23/V15
Waterhemp (range/Avg) Trt. 1	PPI	cot-5 lf/2 lf; 0.125-0.25"/0.125"	-	cot-28 lf/13.5 lf; 0.125-21"/7.75"
Waterhemp (avg. density) Trt. 1	PPI	9/M <sup>2</sup>	-	25/M <sup>2</sup>
Waterhemp (range/Avg) Trt. 2	PPI	-	-	cot-21 lf/6.5 lf; 0.125-9"/1.9"
Waterhemp (avg. density) Trt. 2	PPI	-	-	3.8/M <sup>2</sup>
Waterhemp (range/Avg) Trt. 3	PPI	-	-	4 lf; 0.75"
Waterhemp (avg. density) Trt. 3	PPI	-	-	0.1/M <sup>2</sup>
Waterhemp (range/Avg) Trt. 7	PPI	-	-	cot-5 lf/3 lf; 0.125-1"/0.67"
Waterhemp (avg. density) Trt. 7	PPI	-	-	0.4/M <sup>2</sup>

**Summary:** Sugarbeet injury was greatest on June 27 and declined to almost no injury by August 9. All treatments having a preplant herbicide caused more sugarbeet injury than glyphosate alone and Ro-Neet followed by Warrant plus Roundup PowerMAX plus Betamix plus Nortron caused the greatest injury. Treatments having Outlook mixed postemergence caused the next greatest sugarbeet injury regardless of the preplant herbicide. No treatment caused a reduction in sugarbeet stand at any time recorded.

Roundup PowerMAX caused 82 and 92% mortality of ten flagged waterhemp plants per plot and controlled 80 and 61% of waterhemp on June 27 and August 24, respectively, indicating the presence of glyphosate-resistant waterhemp. Roundup PowerMAX reduced waterhemp density and size compared to the untreated check. Nortron and Ro-Neet followed by Betamix plus Nortron plus Roundup PowerMAX reduced waterhemp density and size compared to Roundup PowerMAX alone on July 12. All treatments containing Ro-Neet and Nortron alone controlled waterhemp greater than Ro-Neet plus Eptam.

Treatments 5, 8, 10, 11, and 12 reduced extractable sucrose compared to Roundup PowerMAX alone and Ro-Neet followed by Betamix plus Nortron plus Roundup PowerMAX.

**Experiment continued on next page.**



**Table 2. Ro-Neet versus Nortron followed by postemergence and lay-by herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	June 27	June 27	June 30	Aug. 1
			Sgbt Inju %	Wahe Cntl %	Sgbt Popl /60ft row	Sgbt Popl /60ft row
1. Untreated Check	-	-	0	0	107	106
2. Roundup PM	1.125	June 9				
Roundup PM	0.75	June 27				
		July 12	0	80	100	102
3. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27				
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	3	99	104	112
4. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	10	99	95	101
5. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	7	99	104	110
6. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	8	99	111	111
7. Ro-Neet SB (PPI)	5.3 pt/A	May 16				
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27				
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	3	98	96	104
8. Ro-Neet SB (PPI)	5.3 pt/A	May 16				
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	10	99	96	103
9. Ro-Neet SB (PPI)	5.3 pt/A	May 16				
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	6	99	106	11
10. Ro-Neet SB (PPI)	5.3 pt/A	May 16				
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	16	99	106	109
11. Eptam + Ro-Neet SB (PPI)	2.3 + 3.3 pt/A	May 16				
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27				
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	3	97	108	117
12. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Betamix+Nortron (No Destiny HC)	1.125+2 pt/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron (No Destiny HC)	0.75+3pt/A+4 fl oz/A	June 27				
Roundup PM+Betamix+Nortron (No Destiny HC)	0.75+4 pt/A+4 fl oz/A	July 12	7	99	109	109
LSD (5%)			2.2	1.4	NS	NS

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) at 2.5% v/v and Destiny HC (HSOC {MSO based}) from Winfield Solutions) at 1.5 pt/A [except treatment 15] was included in all postemergence treatments. Roundup PM=Roundup PowerMAX formulation of glyphosate.

**Table continued on next page.**

**Table 2. Ro-Neet versus Nortron followed by postemergence and lay-by herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	Aug. 9	Aug. 9	Aug. 24
			Sgbt Inju %	Wahe Cntl %	Wahe Cntl %
1. Untreated Check	-	-	0	0	0
2. Roundup PM	1.125	June 9			
Roundup PM	0.75	June 27			
		July 12	0	68	61
3. Nortron (PPI)	7.5 pt/A	May 16			
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9			
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27			
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	0	99	99
4. Nortron (PPI)	7.5 pt/A	May 16			
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	June 9			
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 27			
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	1	99	99
5. Nortron (PPI)	7.5 pt/A	May 16			
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	June 9			
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 27			
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	1	99	99
6. Nortron (PPI)	7.5 pt/A	May 16			
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	June 9			
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 27			
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	0	99	99
7. Ro-Neet SB (PPI)	5.3 pt/A	May 16			
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9			
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27			
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	1	99	98
8. Ro-Neet SB (PPI)	5.3 pt/A	May 16			
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	June 9			
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 27			
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	1	99	99
9. Ro-Neet SB (PPI)	5.3 pt/A	May 16			
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	June 9			
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 27			
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	1	99	99
10. Ro-Neet SB (PPI)	5.3 pt/A	May 16			
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	June 9			
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 27			
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	2	99	99
11. Eptam + Ro-Neet SB (PPI)	2.3 + 3.3 pt/A	May 16			
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9			
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27			
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	2	96	95
12. Nortron (PPI)	7.5 pt/A	May 16			
Roundup PM+Betamix+Nortron (No Destiny HC)	1.125+2 pt/A+4 fl oz/A	June 9			
Roundup PM+Betamix+Nortron (No Destiny HC)	0.75+3pt/A+4 fl oz/A	June 27			
Roundup PM+Betamix+Nortron (No Destiny HC)	0.75+4 pt/A+4 fl oz/A	July 12	2	99	99

LSD (5%)

NS 2.2 2.9

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) at 2.5% v/v and Destiny HC (HSOC {MSO based}) from Winfield Solutions) at 1.5 pt/A [except treatment 15] was included in all postemergence treatments. Roundup PM=Roundup PowerMAX formulation of glyphosate.

**Table continued on next page.**

**Table 2. Ro-Neet versus Nortron followed by postemergence and lay-by herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate	Date of Applic.	Sept. 7 Sglt Popl	Sept. 7 Root Yield	Sept. 7 Sucrose	Sept. 7 Extrac Sucrose
	lb ai/A or lb ae/A		Plts/20'	Tons/A	%	lb/A
1. Untreated Check	-	-	38	12.8	13.5	2807
2. Roundup PM	1.125	June 9				
Roundup PM	0.75	June 27				
		July 12	41	19.8	14.7	4730
3. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27				
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	36	19.8	14.3	4612
4. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	39	18.7	14.2	4220
5. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	42	17.7	14.0	4027
6. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	41	18.2	14.5	4296
7. Ro-Neet SB (PPI)	5.3 pt/A	May 16				
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27				
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	37	21.0	14.0	4798
8. Ro-Neet SB (PPI)	5.3 pt/A	May 16				
Roundup PM+Nortron+Outlook+Betamix	1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Nortron+Outlook+Betamix	0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	37	17.7	14.2	4016
9. Ro-Neet SB (PPI)	5.3 pt/A	May 16				
Roundup PM+Dual Magnum+Nortron+Betamix	1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Dual Magnum+Nortron+Betamix	0.75+1 pt/A+4 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	43	19.2	14.3	4514
10. Ro-Neet SB (PPI)	5.3 pt/A	May 16				
Roundup PM+Warrant+Nortron+Betamix	1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A	June 9				
Roundup PM+Warrant+Nortron+Betamix	0.75+1 qt/A+4 fl oz/A+16 fl oz/A	June 27				
Roundup PM+Nortron+Betamix	0.75+4 fl oz/A+24 fl oz/A	July 12	36	17.3	14.5	3996
11. Eptam + Ro-Neet SB (PPI)	2.3 + 3.3 pt/A	May 16				
Roundup PM+Betamix+Nortron	1.125+12 fl oz/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron	0.75+16 fl oz/A+4 fl oz/A	June 27				
Roundup PM+Betamix+Nortron	0.75+24 fl oz/A+4 fl oz/A	July 12	44	18.1	14.1	4081
12. Nortron (PPI)	7.5 pt/A	May 16				
Roundup PM+Betamix+Nortron (No Destiny HC)	1.125+2 pt/A+4 fl oz/A	June 9				
Roundup PM+Betamix+Nortron (No Destiny HC)	0.75+3pt/A+4 fl oz/A	June 27				
Roundup PM+Betamix+Nortron (No Destiny HC)	0.75+4 pt/A+4 fl oz/A	July 12	35	17.8	13.8	3974
LSD (5%)			NS	2.73	NS	641.5

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) at 2.5% v/v and Destiny HC (HSOC {MSO based}) from Winfield Solutions) at 1.5 pt/A [except treatment 15] was included in all postemergence treatments. Roundup PM=Roundup PowerMAX formulation of glyphosate.

**Postemergence Nortron plus glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011.**

(Stachler) ‘Hilleshog 4022’ sugarbeet seed treated with Tachigaren at 45 grams product per 100,000 seeds and Poncho Beta was seeded May 4 at 60,825 seeds/A in six row plots 30 feet in length in a cooperator’s field having glyphosate-resistant waterhemp. Headline at 12 fl oz/A was applied in-furrow at planting to all plots. Treatments were applied June 2, June 16 and June 30. All treatments were applied in 17 gpa water at 40 psi through XR8002 nozzles to the center four rows of six row plots. All treatments included N-Pak AMS (a liquid AMS solution) at 2.5% v/v. Quadris at 15.4 fl oz/A was applied to the entire experiment on June 15. Sugarbeet injury was evaluated June 16, June 30, July 14 and July 20. Common lambsquarters and wild buckwheat control were evaluated June 30, July 14 and July 20. Annual grass control was evaluated July 20. Waterhemp control was evaluated June 16, June 30, July 14, July 20 and August 24. Waterhemp was counted in one meter square at two locations in each plot and averaged together to determine the average waterhemp density per meter squared for each plot July 25. Proline at 5.7 fl oz/A plus NIS at 0.25 %v/v, Agritin at 8 oz/A plus Manzate at 2 pounds/A, and Headline at 7 fl oz/A were applied on July 19, August 9, and August 26, respectively, over the entire trial area to control Cercospora. Sugarbeet from 20 feet of one center row in each plot were harvested September 7.

**Table 1. Application information.**

Date of Application	June 2	June 16	June 30
Time of Day	11:30 am	11:00 am	12:00 pm
Air Temperature (°F)	80	68	88
Relative Humidity (%)	44	68	60
Soil Temp. (°F at 6")	58	57	72
Wind Velocity (mph)	28	4	9
Cloud Cover (%)	90	60	85
Soil Moisture	good	good	good
Sugarbeet Stage (range/Avg)	V1.0-V4.5/V3.6	V6.0-V12.0/V9.5	V6.0-V12.0/V10.0
Waterhemp (range/Avg) Trt. 1	cot-7 lf/4 lf; 0.125-1.25"/0.5"	cot-17 lf/12 lf; 0.25-12.5"/5.5"	cot-24 lf/16 lf; 0.5-25"/14"
Waterhemp (avg. density) Trt. 1	218/M <sup>2</sup>	364/M <sup>2</sup>	41/M <sup>2</sup>
Waterhemp (range/Avg) Trt. 12	cot-7 lf/4 lf; 0.125-1.25"/0.5"	1-16 lf/8 lf; 0.25-5.25"/2"	cot-14 lf/ 7 lf; 0.125-6"/1.75"
Waterhemp (avg. density) Trt. 12	79/M <sup>2</sup>	64/M <sup>2</sup>	17/M <sup>2</sup>
Common Lambsquarters (range/Avg) Trt. 1	2-11 lf/5 lf; 0.25-2"/0.75"	4-21 lf/14 lf; 0.5-15"/7"	-
Common Lambsquarters (avg. density) Trt. 1	8/M <sup>2</sup>	21/M <sup>2</sup>	-
Common Lambsquarters (range/Avg) Trt. 12	2-11 lf/5 lf; 0.25-2"/0.75"	6-13 lf/7 lf; 0.75-3"/2"	-
Common Lambsquarters (avg. density) Trt. 12	6/M <sup>2</sup>	0.75/M <sup>2</sup>	-
Annual Grasses (range/Avg) Trt. 1	2-4 lf/3 lf; 0.33-1.5"/1"	2-6 Till/3.5 Till; 1-8"/5"	-
Annual Grasses (avg. density) Trt. 1	7/M <sup>2</sup>	5/M <sup>2</sup>	-
Annual Grasses (range/Avg) Trt. 12	2-4 lf/3 lf; 0.33-1.5"/1"	4 lf-3T/1T; 0.75-1.5"/1"	-
Annual Grasses (avg. density) Trt. 12	19/M <sup>2</sup>	0.75/M <sup>2</sup>	-
Wild Buckwheat (range/Avg) Trt. 1	1-7 lf/4 lf; 0.33-3.5"/1.3"	-	-
Wild Buckwheat (avg. density) Trt. 1	4/M <sup>2</sup>	-	-
Wild Buckwheat (range/Avg) Trt. 12	1-7 lf/4 lf; 0.33-3.5"/1.3"	-	-
Wild Buckwheat (avg. density) Trt. 12	5/M <sup>2</sup>	-	-

Experiment continued on next page.

**Table 2. Postemergence Nortron plus glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	June 16	June 16	July 14	July 14	July 14	July 14
			Sglt Inju %	Wahe Cntl %	Sglt Inju %	Wahe Cntl %	Colq Cntl %	Wibw Cntl %
Untreated Check	-	-	0	0	0	0	0	0
Roundup PowerMAX	1.125	June 2						
Roundup PowerMAX	0.75	June 16	2	70	0	60	98	92
Roundup PowerMAX	1.125	June 2						
Roundup PowerMAX	0.75	June 16, 30	1	65	0	74	100	87
Roundup PowerMAX+Nortron	1.125+0.125	June 2						
Roundup PowerMAX+Nortron	0.75+0.125	June 16	3	80	0	73	99	93
Roundup PowerMAX+Nortron	1.125+0.5	June 2						
Roundup PowerMAX+Nortron	0.75+0.5	June 16	5	84	0	78	100	78
Roundup PowerMAX+Nortron	1.125+1	June 2						
Roundup PowerMAX+Nortron	0.75+1	June 16	10	88	2	90	99	93
Roundup PowerMAX+Nortron	1.125+1.5	June 2						
Roundup PowerMAX+Nortron	0.75+1.5	June 16	11	91	5	94	99	89
Roundup PowerMAX+Nortron	1.125+1.875	June 2						
Roundup PowerMAX+Nortron	0.75+1.875	June 16	11	87	3	93	100	88
Roundup PowerMAX+Nortron	1.125+0.25	June 2						
Roundup PowerMAX+Nortron	0.75+0.125	June 16	5	86	1	75	98	85
Roundup PowerMAX+Nortron	1.125+1	June 2						
Roundup PowerMAX+Nortron	0.75+0.5	June 16	6	81	0	76	99	78
Roundup PowerMAX+Nortron	1.125+0.125	June 2						
Roundup PowerMAX+Nortron	0.75+0.125	June 16, 30	3	75	1	64	100	93
Roundup PowerMAX+Nortron	1.125+0.5	June 2						
Roundup PowerMAX+Nortron	0.75+0.5	June 16, 30	4	78	3	85	100	86
LSD (5%)			3.2	7.2	2.3	8.9	2.2	11.7

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v.

Table continued on next page.

**Table 2. Postemergence Nortron plus glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)**

Treatment <sup>1</sup>	Rate lb ai/A or lb ae/A	Date of Applic.	July 25	Aug24	Sept. 7	Sept. 7	Sept. 7	Sept. 7
			Wahe Popl plt/M <sup>2</sup>	Wahe Cntl %	Root Yield ton/A	Sucr %	Extr Sucr lb/A	Sgbr Popl plt/20'
Untreated Check	-	-	290 a	0	0	-	0	-
Roundup PowerMAX	1.125	June 2						
Roundup PowerMAX	0.75	June 16	28 b	42	14.4	14.1	3401	51
Roundup PowerMAX	1.125	June 2						
Roundup PowerMAX	0.75	June 16, 30	6 bc	62	15.2	13.8	3459	52
Roundup PowerMAX+Nortron	1.125+0.125	June 2						
Roundup PowerMAX+Nortron	0.75+0.125	June 16	5 bc	49	13.4	13.3	2886	46
Roundup PowerMAX+Nortron	1.125+0.5	June 2						
Roundup PowerMAX+Nortron	0.75+0.5	June 16	13 bc	51	14.1	13.9	3243	44
Roundup PowerMAX+Nortron	1.125+1	June 2						
Roundup PowerMAX+Nortron	0.75+1	June 16	2 c	70	15.2	13.7	3445	51
Roundup PowerMAX+Nortron	1.125+1.5	June 2						
Roundup PowerMAX+Nortron	0.75+1.5	June 16	1 c	78	15.7	13.5	3430	55
Roundup PowerMAX+Nortron	1.125+1.875	June 2						
Roundup PowerMAX+Nortron	0.75+1.875	June 16	2 c	77	14.8	13.6	3286	50
Roundup PowerMAX+Nortron	1.125+0.25	June 2						
Roundup PowerMAX+Nortron	0.75+0.125	June 16	5 bc	48	12.9	13.7	2881	49
Roundup PowerMAX+Nortron	1.125+1	June 2						
Roundup PowerMAX+Nortron	0.75+0.5	June 16	8 bc	50	13.2	13.6	2921	54
Roundup PowerMAX+Nortron	1.125+0.125	June 2						
Roundup PowerMAX+Nortron	0.75+0.125	June 16, 30	15 bc	51	15.2	13.6	3409	53
Roundup PowerMAX+Nortron	1.125+0.5	June 2						
Roundup PowerMAX+Nortron	0.75+0.5	June 16, 30	6 bc	65	13.1	13.5	2878	52
LSD (5%)			-	11.0	3.3	NS	745	NS

<sup>1</sup>N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v.

**Summary:** Nortron applied twice at greater than or equal to 2.0 lb ai/A caused the greatest sugarbeet injury of the season on June 16. Injury declined over time reaching nearly negligible levels for nearly all treatments by July 14. On June 16, Roundup PowerMAX applied at 1.125 lb ae/A caused 75% (data not shown) mortality of ten flagged waterhemp plants/plot and controlled 67% of waterhemp, indicating the presence of glyphosate-resistant waterhemp in this research trial. Waterhemp mortality improved to 92% (data not shown) by August 24, however Roundup PowerMAX applied two or three times only controlled 42 and 62% of waterhemp, respectively. On June 16, Nortron mixed at all rates with Roundup PowerMAX improved waterhemp control compared to Roundup PowerMAX alone. By August 24, only Nortron mixed at a total of 2.0 lb ai/A or greater improved waterhemp control compared to Roundup PowerMAX alone. Sugarbeet root yield and extractable sucrose was similar for all treatments with Nortron at 1.5 lb ai/A plus Roundup PowerMAX producing the greatest root yield. The lack of treatment differences in root yield and extractable sucrose was likely caused by inconsistent control of *Cercospora* and frequency of resistant waterhemp plants in each plot.